



Healthcare Analytics in Navy Medicine

Perspectives and Methods for Decision-Making

FOCUS ON MEDICAL MANAGEMENT

The Role of the Case Manager in Navy Medical Management

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Medical Management is an interdisciplinary approach across multiple levels of an organization for balancing quality, risk, and cost concerns in the provision of patient care.¹ In the past this concept has been framed in terms of the practices of utilization management (UM), case management (CM), and disease management (DM). Navy Medicine has, however, chosen to not view each core component singularly but as important links between the delivery of health services along the continuum of care. This view is an accommodation to today's health care climate which emphasizes: the demand for return on investment in health services, improved technology to promote data analysis, information sharing, the need to interface more productively with patients and providers, and legislative and regulatory mandates. Three consequential goals of Medical Management activities as pursued within Military Medicine are improving access and quality, managing cost, and optimizing readiness.²

Medical management has shifted from low-yield, micromanagement activities, such as precertification, towards CM and DM. The goal is to identify high-risk patients for whom medical management activities yield a greater return on investment. Moreover, the UM emphasis has shifted to discharge planning and assuring post-hospital care needs are met and away from micromanaging the day-to-day-hospital course through concurrent review.³

Case managers, once predominantly employed by health plans, are now in Military Treatment Facilities (MTFs) in various departments such as primary and specialty clinics, deployment health, Exceptional Family Member Programs, behavioral health, and medical home programs. Their expansion to other health care locations/programs is evidence of their demand

as navigators of the health care system. Regardless of the practice setting, the Navy case manager acts as the linchpin between the client/support system and various members of the healthcare team, both internal and external to the organization.

Navy case managers provide services to active duty members, retirees, and their families. With the current conflicts in Iraq and Afghanistan, the severity of incurred physical and behavioral health injuries necessitated Navy Medicine and case management to streamline and augment the many processes required to support all Wounded Ill and Injured Service (WII) members, starting from point of injury on the battlefield until they return to full duty or medically retire. Such processes and program enhancements are not limited to Wounded Warriors. All beneficiaries, depending upon their requirements, are rendered all or part of these services.

Navy case management follows the Case Management Society of America's (CMSA) definition for case management, which states that case management "is a

IN THIS ISSUE

Volume 2 • Issue 3

Focus on Medical Management	1
Skills and Methods – <i>Evaluating Caseload Size</i>	3
Data and Information Systems – <i>M2 Corporate Reports for Medical Management</i>	4
New Knowledge – <i>Noted Publications</i>	6
What's Coming Up	6
Tips and Tricks	6
Knowledge Sources – <i>Recommended Serials</i>	8

¹ Kongstvedt, P.R. (2001). *The Managed Health Care Hand Book*, Aspen Publishers, Inc.

² Medical Management Guide, Version 3.0. (2009). DoD TRICARE Management Activity, Department of Defense.

³ Craig, K. (2011). *Case Management Core: Right-sized Caseloads*, The Caseload Guidebook for Successful Outcomes, Case In Point, Dorland Health.

collaborative process of assessment, planning, facilitation and advocacy for options and services to meet an individual's health needs through communication and available resources to promote quality cost-effective outcomes." Clinical case managers are an integral part of Navy Medicine and a valuable resource. They work collaboratively with the physician and the healthcare team in complex healthcare situations and identify care options which are acceptable to the patient and family. This will, in turn, increase adherence to the patient-driven treatment plan of care and successful outcomes.

Case management, in conjunction with the health team and other departments (i.e. Patient Administration and Finance), identifies high-risk populations and develops customized patient-driven care plans to guide those individuals to better self-manage their condition and use resources judiciously. Also, various system and referral sources may be used to identify patients who are high-risk or high-utilizers (e.g., emergency department use, claims for purchased care, and polypharmacy). From these and other sources, patients who would benefit from case management services are assessed, and with input from the healthcare team, a plan of care is developed to include prioritization of patient needs, the establishment of treatment goals, as well as the types of services and resources required to meet the established goals or desired outcomes. The plan, under the guidance of the case manager, is put into action. On-going verification of whether the plan in action continues to be appropriate, understood, and documented is conducted based on changes in the patient's condition, lack of response to the plan, transitions across various care settings, and any identified barriers to care/services. Again, all changes to the plan are made in collaboration with the patient/family and healthcare team. Termination of the plan brings closure to the care and/or episode of illness and focuses on discontinuing case management and the transition of the patient to another level of care, including back to the patient's command or community.

It is important to have an evaluation process and plan to determine the effectiveness of the various medical management programs such as case management. Indices of quality or outcomes may be the best measures of effectiveness as they provide an understanding of the functioning of the organization and its effects on the

provision of services and patient care. For the patient, outcomes are defined as the goals of the health care process. A good outcome is one that has achieved a desired goal. The individualized plan of care is a source of outcome indicators using whether or not the goals defined by the patient, family, healthcare team were met. Also, the use of clinical pathways help to understand the effects of medical management on an individual patient and, in the broadest sense, provide an understanding of the functions (i.e., efficiency and effectiveness) of an organization or the healthcare system at large.

Patient-related outcomes of case management vary based on the specific needs and condition of the individual patient/support system, which are driven by the patient's acuity and intensity of the resources needed. Outcomes may include those related to:³

- Adherence to a health regimen through coaching
- Education or counseling
- Controlled clinical condition through symptom management
- Medication compliance
- Healthy lifestyle behavior change
- Patient transition across the health continuum that is smooth and safe
- Improvement in the patient's quality of life.

For Wounded Warriors or beneficiaries who are seriously ill, case managers also work closely with family members/caregivers to achieve not only goals of the patient but also those of the caregiver. Caregiver goals might include the ability to feel confident and competent in providing care, the need to have resources to maintain their psychological and emotional health, and the ability to feel supported and not alone in providing care. Caregivers greatly benefit from the teachings and interventions employed by the case manager.

As health care delivery evolves in the twenty-first century, the role of case management will expand into a variety of practices, will meet the challenges presented by the multitude of issues posed by a transforming health care system, and will adjust to meet the needs of the future. Yet, the case manager will remain an advocate, an educator, a collaborator, an evaluator, and above all,

restore as much as possible the patient's individual universe.

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The Case Management Tool Kit is a training resource for new case managers and provides additional information on the breadth and scope of the Navy Case Management Program. For more information, visit <http://www.med.navy.mil/bumed/CaseManagement/Pages/default.aspx>.

SKILLS AND METHODS

– EVALUATING CASELOAD SIZE

Because of the broad range of activities involved and the high variance in patient's needs, it is challenging to measure the actual "amount" of case management services each individual requires in order to provide and assess quality care and manage outcomes. Like their civilian counterparts, MHS case managers have struggled with inconsistent and inappropriate case management caseload sizes. As the levels of severity, complexity, and intensity (acuity) increase, so does the time and number of case management interventions required to meet individual patient needs. In the MTF, most case management services are delivered during ambulatory clinic-based encounters.

Caseload size can impact both healthcare outcomes and case manager job satisfaction. Determining the appropriateness of the case manager's caseload size is a multi-factorial and complex process.¹ Factors affecting caseload size include:

- Practice setting
- Case manager's knowledge
- Skills and competencies of the case manager
- Patient acuity levels
- Technological support
- Diverse responsibilities of the case manager (discussed in previous section)

Although specific caseload guidelines are established by each Service, Navy case management is guided by the caseload recommendations from two resources. One is the 2009 *Interim Guidance for Clinical Case Management for Wounded, Ill and Injured Service Member in the MHS* which states:

- The standard number of cases to be managed by each case manager shall be no more than 30.
- The evaluation of the number of cases to be managed by each case manager can be modified where clinically indicated.

The second resource is the *BUMED Instruction 6300.17*, Nov. 23, 2009, *Navy Medicine Clinical Case Management*, where the caseload for case management ranges from 10 to 50 patients per case manager depending on acuity.

BUMED receives a biweekly case management spreadsheet identifying:

- MTFs by Region
- Number of Combat Related, Active Duty (AD) Non-combat, and Other (retirees, non-active duty beneficiaries) patients receiving case management services
- The number of case management patients who are Level I (least intensive), II, III, IV or V (most intensive) acuity
- The total number of cases and case managers on board and total funded positions (including those on board) per region and per command

BUMED evaluates case management caseload at the command using total number of patients receiving case management services, the total number of case managers on board, and the caseload if all the funded positions were filled. Aware of the impact of high caseloads on the case manager, the Lead Case Manager is contacted to inquire about the cause of high caseloads (high 30's – 40 or greater) and acuity levels range from III - V. Potential causes could be the need to close cases, staff on TAD, position vacancies, and/or an increase in patient admissions.

The biweekly case management spreadsheet uses a formula, developed by BUMED, which calculates the number of case management positions needed and indi-

¹ Tahan, H. (2011). Considerations for Case Manager's Caseload Size Calculation, The Caseload Guidebook for Successful Outcome, Case In Point, Dorland Health.

vidual case manager caseload acuity based on an acuity weighted average. Using the definitions of acuity levels (I-IV) and Instruction guidance on the maximum number of patients who could be safely managed by one case manager, the following number of patients are assigned to each level in the formula:

- Level I – 50 patients
- Level II – 32 patients
- Level III – 24 patients
- Level IV – 12 patients
- Level V – 10 patients

The number of case managers needed is calculated using the formula:

$$(A/50) + (B/32) + (C/24) + (D/12) + (E/10)$$

where A through E are the number of patients being managed in acuity levels I through V, respectively. This acuity weighted average formula has been used by Navy Medicine for the past four years to provide biweekly data on case management activity, but Navy Medicine is always receptive to exploring new calculation methods.

It is important to note that Clinical Case Managers are also required to document and code their services in AHLTA. Guidance is provided by the Unified Biostatistical Utility (UBU) at www.tricare.mil/ocfo/bea/ubu/coding_guidelines.cfm on how case managers are required to code their services. For example, provider specialty and HIPAA taxonomy codes for registered nurse and social work case managers, MEPRS codes for funding of wounded warrior, and other case management beneficiary types provide data on the number of clinical case managers. The ICD-9-CM diagnosis code for “conditions influencing health care” (V49.89) and CPT Evaluation and Management (E&M) code for “general medical examination” (99499) provide data on the number and types of beneficiaries for whom case managers provide services. HCPCS codes for “coordinated care” (G9002, G9005, G9009, G9010 and G9011) are used by case managers to document acuity per case so the workload of case managers can be tracked and, if needed, adjusted to accommodate the caseload of each case manager. Each acuity code is defined by the intensity of services provided per case from Level 1 (least intensive) to Level 5 (most intensive).

DATA AND INFORMATION SYSTEMS

– M2 CORPORATE REPORTS FOR MEDICAL MANAGEMENT

M2 corporate documents are pre-formatted Business Objects queries and reports that are available to all M2 users. These reports were built to address commonly asked questions and can be used “as is” or customized for specific information needs. This article discusses M2 corporate reports that were developed specifically for case management and medical management purposes.

Using M2 Corporate Documents

Users can view most M2 corporate documents in Info-View under the path “Public Folders-M2-TMA/HA”. Corporate documents developed for questions related to case management and medical management can be found under the subfolder “Case Mgmt/Medical Mgmt”. For full functionality, open an M2 DESKI session, and select “File-Import from Repository-Public Folders”. Ensuring the “Folders” option is selected, navigate to “Public Folders-M2-TMA/HA-Case Mgmt/Medical Mgmt”. Locate the desired report, highlight it, and click “Retrieve”.

There are two types of M2 corporate documents: 1) those that contain pre-populated data and 2) those that require the user to run the report and answer a prompt. For reports that require a prompt, hit the refresh button and follow the statement prompts (e.g., “Enter DMIS ID, Like 0029”). Pay careful attention to the formatting of any prompted value entered. Users can also re-run a report that contains pre-populated data, especially if the ‘date last updated’ cell in the report is old.

Corporate documents can also be customized using the slice and dice panel and/or by modifying the query panel. All changes and updates to the corporate document can be saved as a *.rep file on the user’s hard drive and/or exported to other applications such as Excel.

Medical Management-Related Reports

Currently, there are 15 corporate documents developed specifically for the purposes of medical management. Below is a brief description of each of the reports con-

tained in these documents, as well as the document file name under the path “Public Folders-M2-TMA/HA-Case Mgmt/Medical Mgmt”.

- Case Manager MEPRS Full Time Equivalent Staffing Report - This report from the MEPRS file contains the available case manager FTEs reported at each MTF. The FTEs counted include only those reported using the MEPRS clinics FAZ2, ELA2 or ELAN, per current coding guidance. (File name: tma.rm.cm.fte.staffing.rep)
- Case Management CAPER Summary – This prompted report contains MTF-level CAPER data on Case Management encounters. Only encounters with a primary diagnosis code of V49.89 under MEPRS clinics FAZ2, ELA2 or ELAN are counted, per current coding guidance. (File name: tma.rm.cm.caper.summary.rep)
- Number of Patients in Case Management – This prompted report from the Case Management file creates a list of patients that are in case management for a desired period at a desired case management location based on acuity level begin and end dates. (File name: tma.rm.cm.patientlist.rep)
- Case Management Patient Health Care Summary – This prompted report contains patient-level health care utilization information for all beneficiaries currently in case management at an individual site for the period the patients were in case management. Includes utilization data from Purchased Care, Direct Care, and Pharmacy. (File name: tma.rm.cm.healthcare.summary.rep)
- Medical Management Patient Health Care Summary – This prompted report contains patient-level health care utilization information. This is a linked health care summary for an individual patient and includes utilization data from Purchased Care, Direct Care, and Pharmacy. (File name: tma.ocmo.medmgmt.healthcare.summary.rep)
- Medical Management Heavy ER Users Report – This prompted report contains person-level ER utilization counts. Includes ER data from Direct Care and Purchased Care. (File name: tma.ocmo.medmgmt.heavy_er.rep)
- Medical Management Preventable Admission Report - This prompted report contains patient-level inpatient records for admissions that are considered to be “preventable”. The report is limited to enrollees continuously enrolled for all 12 months in a specified fiscal year. Includes inpatient data from Purchased Care and Direct Care. (File name: tma.ocmo.medmgmt.prev_adm.rep)
- Medical Management Percentage of Total Admissions that are Preventable Report – This prompted report contains beneficiary category and ACV group-level inpatient records for admissions that are considered to be “preventable”. Includes inpatient data from Direct Care only. (File name: tma.ocmo.medmgmt.prev_adm_pctprevent.rep)
- Medical Management Enrollees with Diabetes and HbA1c Tests Report – This prompted report contains person-level diabetic and HbA1c information. Includes data from Purchased Care and Direct Care. (File name: tma.rm.medmgmt.diabetic_hba1c.rep)
- Medical Management Inpatient Utilization Rates Report – This prompted report contains MTF-level inpatient utilization rates for enrollees. Includes data from Direct Care and Purchased Care. (File name: tma.ocmo.medmgmt.inpat_util_rates.rep)
- Medical Management Outpatient Utilization Rates Report – This prompted report contains MTF-level outpatient utilization rates for enrollees. Includes data from Direct Care and Purchased Care. (File name: tma.ocmo.medmgmt.outpat_util_rates.rep)
- Medical Management Prescriptions for Enrollees Report – This prompted report contains patient-level pharmacy records for enrollees. (File name: tma.ocmo.medmgmt.polypharmacy.rep)
- Medical Management Length of Stay Review Report - This prompted report can be used to identify patients who stayed longer than the same mix of patients treated at a MTF in the same peer group. (File name: tma.ocmo.medmgmt.los_review.rep)
- Medical Management Referral Heavy Providers Report – This prompted report contains provider-level referral information. Includes data from Direct Care only. (File name: tma.ocmo.medmgmt.heavy_referral.rep)

NEW KNOWLEDGE

– NOTED PUBLICATIONS

Results of the Medicare Health Support Disease-Management Pilot Program.

McCall N and Cromwell J.

N Engl J Med. 2011 Nov;365(18):1704-1712.

This large, multi-center study concluded that commercial disease-management programs using nurse-based call centers achieved only modest improvements in quality-of-care measures, with no demonstrable reduction in the utilization of acute care or the costs of care. Outcomes from a randomized study of eight commercial programs that used nurse-based call centers in The Medicare Health Support Pilot Program, which was a demonstration commercial disease-management model for the Medicare fee-for-service program, are reported in this article. Patients with chronic conditions such as heart failure, diabetes, or both, were randomly assigned to the intervention or to usual care (control group), and differences between these two groups were evaluated to determine the effects of the pilot programs on the quality of clinical care, acute care utilization, and Medicare expenditures. The study included more than 240,000 patients and concluded that the commercial disease-management programs did not reduce hospital admissions or emergency room visits, as compared to usual care. Though there were some significant improvements in specific process-of-care measures, the improvements came at a substantial cost to the Medicare program in fees paid to the disease-management companies (\$400 million), with no demonstrable savings in Medicare expenditures.

Read more about this publication at <http://www.ncbi.nlm.nih.gov/pubmed/22047561>.

WHAT'S COMING UP

Addition of Deployment Information to M2

Deployment-related data elements have recently been added to all detail data tables in M2. These data elements are particularly useful for tracking post-deployment health status and utilization, as well as adjusting population cohorts to better reflect per member per

month costs and utilization per enrollee rates. The new Overseas Contingency Operations (OCO) deployment data elements include:

- **OCO Deployed Flag** - Indicates if the member is currently in deployed status as of the reporting date in the record.
- **Ever Deployed Flag (OCO)** - Indicates whether the member had been deployed as of the reporting date in the record.
- **Cumulative OCO Deployed Days** - Indicates how many days the member had been deployed in total since September 11, 2001.
- **Days Since Most Recent Deployment** – Indicates number of days since member's most recent return from deployment.

TIPS AND TRICKS

One of the easiest ways to use and add external data to an M2 report in Business Objects is to establish a personal data provider. Personal data provider files can be created using Excel or any other delimited text or CSV file. Once created, personal data provider files can be used as a list of values to condition an M2 query or combined with true M2 query results to add information (e.g., descriptions or additional data).

Creating Personal Data Provider Files with Excel

Personal data providers can be easily created as Excel workbooks. The first step is determining what information is needed in your report and missing from M2. For example, if using the personal data provider as a list of values, the Excel worksheet might contain a long list of specific person IDs, diagnosis codes, DMIS IDs, etc., that are too cumbersome or impractical to specify with the “type a new constant” operand. If using the personal data provider to add information to results from an existing M2 query, the Excel worksheet might contain both a list of data element codes and descriptions or names corresponding to these codes that are not found elsewhere in M2.

For either example, all data in the Excel workbook should be formatted to match the corresponding data el-

ement in M2. For example, if creating a list of person IDs, the column of data should be formatted as text. If the column is formatted as “general”, Business Objects will interpret the data as numeric and make the object a measure rather than a dimension. Also, if linking data elements from both a personal data provider and a true M2 query, the data will not merge properly if the formats differ for any of the linked data elements.

Once created, the file should be saved as *.xls, because Business Objects still does not import *.xlsx files. Because of this, personal data files saved as *.xls files are limited by the 65K row limit. If more than 65K rows are needed in a personal data file, multiple files <65K rows should be created and imported individually into Business Objects.

Distributing Queries with Personal Data Provider Files to Other Users

If sending Business Object files (*.rep) containing information from a personal data provider to another user, the other user can see results upon opening the file; however, an error will occur if the other user tries to refresh the results. This occurs because the personal data provider file (e.g., Excel worksheet) does not reside on their computer hard drive. To avoid this error and ensure that the report is fully functional for the other user, the personal data provider file (Excel worksheet) should also be sent to the other user, and they should edit the data providers by re-pointing to this file using the Data Manager under “View Data”. Once this is done, the user can refresh successfully.

PERSONAL DATA PROVIDER – EXAMPLE

Illustration/Exercise:

The following example uses a personal data provider Excel file to create a list of specific person IDs for use in a query of the Inpatient Admissions Detail (SIDR) subclass to calculate inpatient costs for this cohort.

1. Create an Excel spreadsheet containing a list of person IDs in a single column with the column header “Person ID”, and ensure these columns are formatted as text. Save the spreadsheet as an *.xls file.
2. Within a Business Objects DESKI session, click on the “New Report Wizard” icon. Select “Specify how to access data”, and click “Begin.” When asked to specify data access, select “Others”, and click “Finish.”
3. On the Access Personal Data screen, select “Browse” to find the appropriate Excel file that has been saved (and closed). Select appropriate “Sheet Name” if more than one worksheet exists in the file, and check “First row contains column names” if this is a true statement. Click “Run.” The Excel results will appear within Business Objects as a report (Report 1).
4. Right click on the “Report 1” tab at the bottom of the screen and select “Insert Report.” This will open another tab within this file. While in the new tab, select “Insert Table.” Place crosshair somewhere on the blank tab (Report 2).
5. A “New Table Wizard” will automatically appear. Select “Access new data in a different way,” and click “Begin.” When asked to specify data access, select “Universe,” and choose the appropriate M2 Universe. Click “Finish.”
6. A new query panel will open, and a query can be created from the Inpatient Admissions Detail subclass, placing “FY”, “Person ID”, “Tmt DMIS ID” and “Full Cost, Total” in the Results Object window. Create the following conditions: “FY Equal to 2011”, and “Tmt DMIS ID Equal to 0029.”
7. To condition “Person ID” based on the Excel list, drag “Person ID” into the conditions box, select “In list” from the choice of operators, and double-click “Select Query Results” from the choice of operands. This will bring up a list of data providers containing any query results that already exist in the *.rep file, including the results from the personal data provider Excel file. Select the appropriate object to use as the values for the condition (Person ID). Click “Run.”

PERSONAL DATA PROVIDER – EXAMPLE (CONT.)

8. The results of the query will include only direct care inpatient costs for those Person IDs brought in from the personal data provider Excel file.

KNOWLEDGE SOURCES

– RECOMMENDED SERIALS

Analytics is ultimately applied to evaluate and effect change within our healthcare system. The following journal is recommended reading for those who wish to broaden their capabilities by acquiring a foundational understanding of current topics and issues in health services research, policy, and practice.

Health Services Research, an official journal of AcademyHealth, publishes peer-reviewed articles reporting findings of rigorously conducted original investigations for health services researchers, managers, policy makers, providers, and students in the areas of finance, organization, delivery and outcomes of health services. The pillars of HSR articles are: scientific integrity, methodological rigor, policy and practice relevance, clarity, originality and significance. In addition to the selected topic, each issue contains the following sections: editorials, Information Systems and Access to Care, Research and Methods Briefs, Methods Corner, and a Special Section.

HSR is published bi-monthly, with two annual special supplements. A subscription is necessary to receive the journal and to access current and archived articles online at www.hsr.org. One article selected per issue is available for free on the website under *Free Article Access*.

IN THE NEXT ISSUE...

The next issue of *Healthcare Analytics in Navy Medicine* will focus on reimbursement strategies and funding adjustments. These strategies include mechanisms such as Per Member Per Month (PMPM), Prospective Payment System (PPS), Pay for Performance (P4P), Outpatient Prospective Payment System (OPPS), and capitation. Together, these activities target the goals of managing costs and improving efficiency. The next issue will describe each mechanism and its purpose, discuss how each mechanism is being phased in or out, highlight any upcoming modifications, and feature skills and tools available to analysts to address these issues.

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This newsletter is produced and distributed by the Program Analysis and Evaluation Division, Bureau of Medicine and Surgery under delivery order # N00189-10-F-Z442.